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CHEMISTRY.

COLOURLESS LAC VARNISH.

I.—*The Sum of* TWENTY POUNDS *was this Session given to Mr.* GEORGE FIELD, *of Syon-hill Park, for his* COLOURLESS LAC VARNISH; *a sample of which has been placed in the Society's Repository.*

II.—*The Sum of* TWENTY POUNDS *was this Session given to Mr.* HENRY LUNING, *of Apothecaries' Hall, for his* COLOURLESS LAC VARNISH; *a sample of which has been placed in the Society's Repository.*

THE varnish prepared by dissolving shell-lac in alcohol is, in hardness and brilliancy, superior to all others, except, perhaps, copal varnish, but can rarely be employed by the painter, on account of its dingy muddy yellowish brown colour. The Society have for some years endeavoured to draw the attention of artists to this subject, by offering a premium for lac varnish sufficiently colourless for the use of painters. The premium was claimed during the present Session by Mr. Field and by Mr. Luning; and on examination the processes of each of these gentlemen appearing to answer the intended purpose, the Society have thought fit to reward both of them.

Mr. Field's process is as follows:—

Six ounces of shell-lac, coarsely pounded, are to be dissolved by gentle heat in a pint of spirits of wine. To this is to be added a bleaching liquor, made by dissolving purified carbonate of potash in water, and then impregnating it with chlorine gas, till the silica precipitates, and the solution becomes slightly coloured.

Of the above bleaching liquor add one or two ounces to the spiritous solution of lac, and stir the whole well together; effervescence takes place, and when this ceases, add more of the bleaching liquor, and thus proceed till the colour of the mixture has become pale. A second bleaching liquid is now to be added, made by diluting muriatic acid with thrice its bulk of water, and dropping into it pulverized red lead, till the last added portions do not become white. Of this acid bleaching liquor, small quantities at a time are to be added to the half-bleached lac solution, allowing the effervescence which takes place on each addition to cease before a fresh portion is poured in. This is to be continued till the lac, now white, separates from the liquor. The supernatant fluid is now to be poured away, and the lac is to be well washed in repeated waters, and finally wrung as dry as possible in a cloth.

The lac obtained in the foregoing process, is to be dissolved in a pint of alcohol, more or less, according to the required strength of the varnish; and, after standing for some time in a gentle heat, the clear liquor, which is the varnish, is to be poured off from the sediment.

"White lac varnish," says Mr. Field, "as above prepared, and used in a temperature of not less than 60°, dries in a few minutes, and is not afterwards liable to chill, or bloom; it is therefore applicable to drawings and prints which have been sized; and may be safely and advantageously used upon oil-paintings, which have been painted a sufficient time, as it bears out colour with the purest effect. This quality prevents its obscuring gilding, and renders it a valuable leather-varnish to the bookbinder, to whose use it has already been applied with happy effect, as it does not yield to the warmth of the hand, and resists damps which subject bindings to mildew.

"As lac is the basis, even in name, of all the metallic lackers, colourless lac may afford silver and steel lackers, with little or no obscuration of their lustre. Its varnish polishes better than any other, and is applicable to some uses of the jeweller, to which purpose it has also been applied, as it has also successfully to the varnishing of light-coloured woods, and cabinet work, to which it is applicable in the manner of French polish; and there can be no doubt it would afford coloured lackers and varnishes of superior quality. In fine, the white lac varnish is generally applicable to the various purposes of other white hard spirit varnishes, and is to be used under the same conditions, and with the same management."

CERTIFICATES.

No. 3, Norris Street, Haymarket,
April 28, 1827.

SIR;

I am desirous of certifying to the Society of Arts, &c. that, having been in the continual habit of using lac and amber varnishes fifty years, I have tried and proved the superior excellence of Mr. Field's white lac varnish, which I consider a most valuable discovery for the Arts. I beg to assure the Society also, that I was authorized by an eminent artist and manufacturer, who had also used and approved it, to offer Mr. Field 100*l*. for the purchase of his process.

I am, Sir,
&c. &c. &c.
GEORGE VEALE.

A. Aikin, Esq.
Secretary, &c. &c.

Sir; Harley Street, May 2, 1827.

I am requested by Mr. Field to give my opinion of the white spirit varnish, made with gum lac, and spirits of wine, by him, and submitted to the Society of Arts for their premium.

I am happy to have it in my power to give my testimony in its favour, as I cannot conceive it possible to make a spirit varnish from so hard and highly-coloured gum, so perfectly colourless and manageable in its application, more pure and excellent in any respect.

I am, Sir,
&c. &c. &c.
W. Beechey.

A. Aikin, Esq.
Secretary, &c. &c.

Sir;

As I have been informed that the Society will meet this evening, and that the merits of Mr. Field's varnish will come under its consideration, I conceive it a duty on my part toward him to express the very high opinion I have formed of it for hardness, transparency, rapidity in drying without tackiness, and the total absence of that worst of vices in the mastic and others, the vice of *blooming*. I have through life been in the habit of talking with artists on subjects always considered as desiderata amongst us; and the one most frequently mentioned was a varnish possessing the above qualities. On such occasions I have frequently heard the wish that *lac* could be deprived of its colour, as thence we might hope for that which is now proved possible, *a perfect varnish.*

For myself, I can only be grateful for the individual advantage my own profession, that of painting, has received; but it appears from various conversations I have had with persons in the habit of using varnishes over woods and metals, that its hardness without brittleness, and its colourless beauty, will give it a general value.

I am, Sir,
&c. &c. &c.
G. F. **Joseph.**

A. Aikin, Esq.
Secretary, &c. &c.

Sir; 10½, Titchfield Street, April 30, 1827.

I have tried Mr. Field's varnish, and find it excellent, both in hardness and goodness of colour, which is whiter than any I have been in the habit of using, and which varnish above mentioned does not get yellow.

I am, Sir,
&c. &c. &c.
J. **Varley.**

A. Aikin, Esq.
Secretary, &c. &c.

Dear Sir; 191, Regent Street, May 2, 1827.

I have tried your white lac varnish upon coloured engravings, and highly approve of its colour and hardness. It certainly works very free, and dries well. I therefore hope it will receive the favour of the Society of Arts.

I am, Sir,
&c. &c. &c.
R. Ackermann, Jun.

Mr. Field.

6, Cirencester Place, Fitzroy Square,
May 2, 1827.

Dear Sir;

Hearing that your lac varnish is before the Society of Arts, I beg to add my testimony to its excellence. I have tried it, and find in it every property that can be wished for in a spirit varnish. I have made many experiments in varnish-making myself, and use chiefly what is of my own manufacture, because I cannot depend upon what is to be had at the shops; but I shall confidently use your's for every purpose when I want a spirit varnish.

I am, Sir,
&c. &c. &c.

Mr. Field. J. LINNELL.

In examination of Mr. Field's varnish by the Committee, it was found slightly to change the colour of test paper, indicating the presence of a little acid; on which it became a question whether the more tender of the colours used by painters were likely to be affected by it. This discussion produced the following letter from Mr. Field:—

SIR; Syon-hill Park, April 28, 1827.

I beg respectfully to suggest to the Committee, that if my white lac varnish contained chlorine, it would bleach test-paper, instead of which it only reddens it, in common with other spirit varnishes. Colours, which could be injured, however, by so weak an agency would be of no value; indeed, many pigments are heightened and improved by acids. I find also, that the brown lac varnish, mastic varnish, poppy oil, and even spirit of wine redden test-paper. Artists are in the constant use of vehicles even less neutral than these, such as vinegar, oils bleached by acids, and mucilage used in water-painting, which is seldom free from acidity; while acetate of lead, and the sulphate of zinc, are constantly employed as dryers, without apparent injury to colours, some of which are salts, as verdigris, &c. and few of them are perfectly neutral; add to which I do not find that bright iron, steel, &c. lackered with my varnish become in the slightest degree tarnished.

I have accompanied this with a specimen of my varnish which does not change test-paper, and I am confident it may be completely edulcorated in the preparation, so as not at all to affect it.

As a farther proof of its not having any property injurious to colours in its present state, I have varnished a coloured diagram, the colours of which are of my own preparing, for inspection of the Committee, without the previous usual defence of an intermediate sizeing; and as the ultra-marine therein (which, though otherwise the most durable of colours, is instantly destroyed by an acid) and also the madder colours (which, resisting entirely the action of light and oxygen, are yet readily destroyed by chlorine) are both unaffected by this varnish, as are also the other colours of the diagram, I think my long experience in such things justifies me in pronouncing it perfectly innocent with regard to colours.

I am, Sir,
&c. &c. &c.
GEORGE FIELD.

A. Aikin, Esq.
Secretary, &c. &c.

Mr. Luning's process is as follows:—

Dissolve five ounces of shell lac in a quart of rectified spirit of wine; boil for a few minutes with ten ounces of well burnt and recently-heated animal charcoal, when a small quantity of the solution should be drawn off, and filtered; if not colourless, a little more charcoal must be added. When all colour is removed, press the liquor through silk, as linen absorbs more varnish, and afterwards filter it through fine blotting-paper.

In cases where the wax contained in gum lac would be objectionable, filter cold; if the wax be not injurious, filter while hot.

On comparing Mr. Luning's varnish with Mr. Field's, in the state in which each was sent to the Society, the former was of a much thinner consistence, and was rendered turbid, by scales of wax and a few particles of charcoal floating in it. On passing it through common white filtering-paper, the impurities were separated, and the liquid came through in a more completely colourless state than Mr. Field's. This seeming advantage was, however, owing to the much greater state of dilution of Mr. Luning's varnish; for, when brought by evaporation to the consistence of Mr. Field's, they each appeared as nearly as possible of the same very pale yellowish tint; so that for the use of the painter and varnisher, they may each be called equally colourless.

Mr. C. Varley having made some interesting comparative experiments on the two varnishes, his letter to the Secretary detailing the same is here added.

52, Upper Thornhaugh Street,
March 31, 1827.

Sir;

I have varnished some of my sketches with Mr. Field's lac varnish, and some with Mr. Luning's ditto.

Mr. Field's varnish appears to me to answer all that can be expected from a varnish. It may be laid on as freely as any other varnish, and dries quick, brilliant, and transparent. It is superior to all other varnishes in its approach to a glassy surface, and in freedom from tackiness. It is about a right strength or body, though I prefer a sample I had before from Mr. Field, which is as thick as can be laid on; for it is desirable for a varnish to be as thick as will allow time for it to be spread on, because it then thickens so soon, that its solvent has no time to act on the oil or colours of the picture.

Mr. Luning's varnish is a great deal too thin, and therefore requires two or three coats before it will bear out; and then, owing to its thinness, the activity of the spirit softens the first coat of varnish, and renders it uneven.

It is not so brilliant as Mr. Field's, owing to the mixture (not solution) of wax, and is rather dirty, from the wax retaining some of the charcoal. Therefore I most decidedly give the preference to Mr. Field's varnish.

I have succeeded in throwing down both the wax and charcoal by adding spirit (essential oil) of turpentine, which dissolves the wax, and the solution then becomes sufficiently heavy to separate from the varnish; it requires at least one of spirit of turpentine to three of the varnish before the former is heavy enough to separate, and then it is scarcely a liquid, and separates very slowly; but if more spirit of turpentine is added, it goes down quicker. The varnish dissolves a small portion of the spirit of turpentine, which I feared might be an evil, when drying: but I cannot perceive that it makes any difference. Mr. Luning's varnish, when so freed, appears more colourless than Mr. Field's; but, if brought to the same strength, there would be very little difference; but probably a union of the two processes may produce the varnish like water, though the colour of each is at present equal or superior to most of the varnishes now in use, and will therefore stand at the head as the chief varnish.

I am, Sir,
&c. &c. &c.
CORNELIUS VARLEY.

A. Aikin, Esq.
Secretary, &c. &c.

In the Philosophical Transactions, Vol. LXXXIV. is a chemical examination of lac by Mr. Hatchett, from which it appears, that one hundred parts of shell lac consist of 90·9 resin, 4 wax, 2·8 gluten, and 0·5 extract. Cold alcohol will take up eighty-one parts of the resin, and leave the wax and gluten untouched; it would, therefore, probably, be an improvement on either of the above processes, to make the first solution of the shell lac in cold instead of in warm or boiling alcohol.